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Amendment dated 05/02/2007

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The following is a complete listing of all claims in the application, with an indication of the status of each:

**Listing of claims:**

- 1           1. (currently amended) A decoding apparatus comprising:
  - 2                   reception means for receiving data on a dedicated physical control
  - 3                   channel and data on a dedicated physical data channel, which are coded into a
  - 4                   complex code of a single system which is to be transmitted as an uplink signal
  - 5                   from a mobile unit to a base station in a 3rd generation cell phone system, said
  - 6                   complex code including a quadrature code representation of Transport Format
  - 7                   Combination Indicator (TFCI) information contained within said control
  - 8                   channel data;
  - 9                   TFCI decoding characteristic feedback means for using quadrature
  - 10                  correlation characteristics of said quadrature code to determine determining
  - 11                  TFCI decoding characteristics of a coded TFCI code on the dedicated physical
  - 12                  control channel; and
  - 13                  dedicated physical data channel correcting means for performing data
  - 14                  correction for the dedicated physical data channel on the basis of a
  - 15                  determination result on the TFCI decoding characteristics.
- 1           2. (original) An apparatus according to claim 1, wherein said TFCI decoding
  - 2                   characteristic feedback means comprises
  - 3                   dedicated channel control means for controlling a dedicated channel,
  - 4                   outputting a TFCI count corresponding to a service, and outputting a decoding
  - 5                   parameter corresponding to a received TFCI value,
  - 6                   data correcting means for processing a correction value calculated
  - 7                   from TFCI decoding characteristics of a dedicated physical control channel

8 with respect to data on a dedicated physical data channel which is received  
9 from a mobile unit,  
10 de-interleave rate de-matching means for channel-decoding an output  
11 from said data correcting means on the basis of a decoding parameter from  
12 said dedicated channel control means, and  
13 error correcting/decoding means for decoding an output from said  
14 deinterleave rate dematching means while performing error correction for the  
15 output to obtain decoded data on the dedicated physical data channel, and  
16 said dedicated physical data channel correcting means comprises  
17 symbol data determining means for extracting/separating a TFCI code  
18 from data on a dedicated physical control channel,  
19 soft decision TFCI decoding means for TFCI-decoding a TFCI code  
20 output from said symbol data determining means on the basis of a TFCI count  
21 from said dedicated channel control means, transmitting an obtained TFCI  
22 value to said dedicated channel control means, and outputting correlation  
23 values with a Walsh quadrature vector at the time of TFCI decoding,  
24 correlation value characteristic storage means for sequentially storing  
25 correlation values output from said soft decision TFCI decoding means, and  
26 correction value calculating means for determining TFCI decoding  
27 characteristics from a plurality of correlation values stored in said correlation  
28 value characteristic storage means, calculating the correction value, and  
29 outputting the correction value to said data correcting means.

1 3. (original) An apparatus according to claim 2, wherein said soft decision  
2 TFCI decoding means comprises  
3 data interchanging means for changing a data order of a reception  
4 TFCI code to allow the code to be subjected to fast Hadamard transform as a  
5 Walsh quadrature vector,

6                   a mask code correlation table which is a code table of 16 combinations  
7                   of mask codes in a TFCI code which are obtained by mod2 addition,  
8                   mask code correlation calculating means for calculating a correlation  
9                   between an output code from said data interchanging means and said mask  
10                  code correlation table,  
11                  fast Hadamard transform means for performing Hadamard transform  
12                  of a code output from said mask code correlation calculating means,  
13                  peak correlation value determining means for determining an absolute  
14                  peak value of Hadamardtransformed data output from said fast Hadamard  
15                  transform means, performing positive/negative determination on the peak  
16                  value, and determining an index thereof to obtain correlation values with a  
17                  Walsh quadrature vector at the time of TFCI decoding, and  
18                  TFCI determining means for determining a TFCI value from a  
19                  determination result from said peak correlation value determining means.

1                   4. (currently amended) An apparatus according to claim 3, wherein said soft  
2                   decision TFCI decoding means further comprises  
3                   TFCI code generating means for generating a TFCI code from a TFCI  
4                   value obtained by said TFCI determining means,  
5                   hard decision TFCI code comparing means for comparing a TFCI code  
6                   generated by said TFCI code generating means with a TFCI code input to said  
7                   soft decision TFCI decoding means to determine whether an error has  
8                   occurred, and  
9                   said correction value calculating means controls calculation of the  
10                  correction value in accordance with an error determination result obtained by  
11                  said hard decision TFCI code comparing means.

1        5. (currently amended) A radio base station apparatus comprising a decoding  
2        apparatus including:  
3                reception means for receiving data on a dedicated physical control  
4        channel and data on a dedicated physical data channel, which are coded into a  
5        complex code of a single system which is to be transmitted as an uplink signal  
6        from a mobile unit to a base station in a 3rd generation cell phone system, said  
7        complex code including a quadrature code representation of Transport Format  
8        Combination Indicator (TFCI) information contained within said control  
9        channel data;  
10               TFCI decoding characteristic feedback means for using quadrature  
11        correlation characteristics of said quadrature code to determine ~~determining~~  
12        TFCI decoding characteristics of a coded TFCI code on the dedicated physical  
13        control channel; and  
14               dedicated physical data channel correcting means for performing data  
15        correction for the dedicated physical data channel on the basis of a  
16        determination result on the TFCI decoding characteristics.

1        6. (currently amended) A decoding method comprising:  
2                the first step of receiving data on a dedicated physical control channel  
3        and data on a dedicated physical data channel, which are coded into a  
4        complex code of a single system which is to be transmitted as an uplink signal  
5        from a mobile unit to a base station in a 3rd generation cell phone system, said  
6        complex code including a quadrature code representation of Transport Format  
7        Combination Indicator (TFCI) information contained within said control  
8        channel data;  
9                the second step of using quadrature correlation characteristics of said  
10        quadrature code to determine ~~determining~~ TFCI decoding characteristics of a  
11        coded TFCI code on the dedicated physical control channel; and

12                   the third step of performing data correction for the dedicated physical  
13                   data channel on the basis of a determination result on the TFCI decoding  
14                   characteristics.

1                   7. (original) A method according to claim 6, wherein the second step  
2                   comprises  
3                   the step of extracting/separating a TFCI code from received data on a  
4                   dedicated physical control channel,  
5                   the step of TFCI decoding the TFCI code, obtaining correlation values  
6                   with a Walsh quadrature vector, and sequentially storing the correlation  
7                   values,  
8                   the step of determining TFCI decoding characteristics from a plurality  
9                   of stored correlation values, and  
10                   the step of calculating a correction value for data correction on the  
11                   dedicated physical data channel.

1                   8. (currently amended) A method according to claim 7, wherein the second  
2                   step comprises  
3                   the step of changing a data order of a reception TFCI code to allow the  
4                   code to be subjected to fast Hadamard transform as a Walsh quadrature  
5                   vector,  
6                   the step of calculating a correlation between the TFCI code after  
7                   interchanging and a preset code table of 16 combinations of mask codes in a  
8                   TFCI code which are obtained by ~~mod 2~~ modulo 2 addition, and performing  
9                   fast Hadamard transform, and  
10                   the step of determining an absolute peak value of Hadamard-  
11                   transformed data, performing positive/negative determination on the peak

12 value, and determining an index thereof to obtain correlation values with a  
13 Walsh quadrature vector at the time of the TFCI decoding.

1 9. (original) A method according to claim 8, wherein the second step  
2 comprises  
3 the step of generating a TFCI code in accordance with a TFCI value  
4 obtained from determination results on the absolute peak value of Hadamard-  
5 transformed data, positive/negative decision on the peak value, and the index  
6 thereof,  
7 the step of determining the presence/absence of an error by  
8 comparison with the reception TFCI code, and  
9 the step of controlling calculation of the correction value in  
10 accordance with the error determination result.

1 10. (currently amended) An apparatus according to claim 1, wherein said  
2 apparatus further comprises reception Signal-to-Interference Ratio (SIR)  
3 measuring means for measuring a reception SIR from a known pilot symbol  
4 on the dedicated physical control channel, and  
5 said dedicated physical data channel correcting means performs data  
6 correction for the dedicated physical data channel on the basis of a  
7 determination result on the TFCI decoding characteristics and the  
8 measurement result on the reception SIR.

1 11. (currently amended) A radio base station apparatus comprising a  
2 decoding apparatus including:  
3 reception means for receiving data on a dedicated physical control  
4 channel and data on a dedicated physical data channel, which are coded into a  
5 complex code of a single system which is to be transmitted as an uplink signal

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6 from a mobile unit to a base station in a 3rd generation cell phone system, said  
7 complex code including a quadrature code representation of Transport Format  
8 Combination Indicator (TFCI) information contained within said control  
9 channel data;  
10 TFCI decoding characteristic feedback means for using quadrature  
11 correlation characteristics of said quadrature code to determine ~~determining~~  
12 TFCI decoding characteristics of a coded TFCI code on the dedicated physical  
13 control channel;  
14 reception Signal-to-Interference Ratio (SIR) measuring means for  
15 measuring a reception SIR from a known pilot signal on the dedicated  
16 physical control channel; and  
17 dedicated physical data channel correcting means for performing data  
18 correction for the dedicated physical data channel on the basis of a  
19 determination result on the TFCI decoding characteristics and the  
20 measurement result on the reception SIR.

1 12. (currently amended) A method according to claim 6, wherein the method  
2 further comprises the step of measuring a reception Signal-to-Interference  
3 Ratio (SIR) from a known pilot signal on the dedicated physical control  
4 channel, and  
5 in the third step, data correction is performed for the dedicated  
6 physical data channel on the basis of the determination result on the TFCI  
7 decoding characteristics and the measurement result on the reception SIR.